

a sampling probe selectively positioned to sample vessel effluent and adapted to transport sampled fluid to the detector,

the fluid handling system comprising an entrance control volume in fluid communication with the inlet of each of the at least six vessels, an exit control volume in fluid communication with the outlet of each of the at least six vessels, and at least six flow restrictors, each of the at least six flow restrictors providing fluid communication between one of the at least six vessels and (i) the entrance control volume or alternatively, (ii) the exit control volume,

the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the at least six flow restrictors being approximately the same, such that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the at least six vessels that is apportioned approximately equally between each of the at least six vessels.

*Jp.* (twice amended) An apparatus for screening members of a library, the apparatus comprising [The apparatus of claim 1 wherein the fluid handling system further comprises]

at least six vessels for receiving library members, each of the at least six vessels having an inlet and an outlet,

a detector for analyzing vessel effluent, and  
a fluid handling system for providing fluid flow simultaneously through the at least six vessels, the fluid handling system comprising

an entrance control volume in fluid communication with the inlet of each of the at least six vessels,

an exit control volume in fluid communication with the outlet of each of the at least six vessels,

at least six flow restrictors, each of the at least six flow restrictors providing fluid communication between one of the at least six vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to

flow in each of the at least six flow restrictors being approximately the same, such that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the at least six vessels that is apportioned approximately equally between each of the at least six vessels,

at least six outlet conduits and a selection valve, the outlet conduits providing fluid communication between the outlet of each of the at least six vessels and the selection valve, [;]

a sample bypass and a sampling valve, the sample bypass providing fluid communication between the selection valve and the sampling valve, [;] and

a return line providing fluid communication between the sampling valve and the exit control volume, [;]

the selection valve being adapted to divert fluid from a selected vessel to the sample bypass while allowing fluid from non-selected vessels to flow to the exit control volume,

the sampling valve being adapted to provide selective fluid communication between the sample bypass and the return line, and between the sample bypass and the detector.

3. (amended) An apparatus for screening members of a library, the apparatus comprising [The apparatus of claim 1, wherein the fluid handling system further comprises]

at least six vessels for receiving library members, each of the at least six vessels having an inlet and an outlet,

a detector for analyzing vessel effluent, and

a fluid handling system for providing fluid flow simultaneously through the at least six vessels, the fluid handling system comprising

an entrance control volume in fluid communication with the inlet of each of the at least six vessels,

an exit control volume in fluid communication with the outlet of each of the at least six vessels,

at least six flow restrictors, each of the at least six flow restrictors providing fluid communication between one of the at least six vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the at least six flow restrictors being approximately the same, such that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the at least six vessels that is apportioned approximately equally between each of the at least six vessels, and

a fluid distribution valve having a first valve portion, [and] a second valve portion, and a plurality of exhaust conduits providing fluid communication between the fluid distribution valve and the exit control volume, [; wherein] the first valve portion providing [provides] selective fluid communication between a test fluid source and the flow restrictors or the vessel inlets and between the test fluid source and the exhaust conduits, [; the second valve portion providing [provides] selective fluid communication between an inert fluid source and the flow restrictors or the vessel inlets and between the inert fluid source and the exhaust conduits, [; and] the resistance to fluid flow in each of the exhaust conduits being [is] approximately the same and being [is] about equal to the resistance to flow in each of the flow restrictors, so that fluid flow is apportioned approximately equally between each of the vessels and exhaust conduits.

14. <sup>16</sup> 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13,  
8. (amended) The apparatus of claims 4, 6, 7, 16, 36, 37, 40, 48, 61, 62, 71, 74 or  
93 [1,] wherein the flow restrictors are selected from the group consisting of [one of]  
capillary tubes, micromachined channels and pin holes.

17 <sup>1, 2, 3, 4, 6, 7, 8, 12, 13, 14</sup>  
15. (amended) The apparatus of claims 4, 6, 7, 36, 37, 40, 71, 74 or 93 [1] further comprising an assembly for containing the vessels, the assembly comprising [comprised of]

a base block having a planar top surface and a bottom surface, the top surface of the base block having a plurality of wells formed thereon, [:] and

a cover block having a planar bottom surface, the bottom surface of the cover block being disposed on the top surface of the base block, and the bottom surface of the cover block having a plurality of depressions formed thereon, [wherein]

the cover block being [is] removably attached to the base block with [and] each of the plurality of depressions being [is] in substantial alignment with one of the wells, such that the aligned depressions and wells form cavities for containing the vessels.

16. (amended) An apparatus for screening members of a library, the apparatus comprising [The apparatus of claim 15, wherein the assembly further comprises] an assembly containing at least six vessels for receiving library members, each of the at least six vessels having an inlet and an outlet, the assembly comprising

a base block having a planar top surface and a bottom surface, the top surface of the base block having a plurality of wells formed therein,  
a cover block having a planar bottom surface, the bottom surface of the cover block being disposed on the top surface of the base block and having a plurality of depressions formed therein, the cover block being removably attached to the base block with each of the plurality of depressions being in substantial alignment with one of the wells, such that the aligned depressions and wells form cavities for containing the vessels, and

vessel inlet ports and vessel outlet ports located on the bottom surface of the base block, [cover; wherein] each of the vessel inlet ports providing [provides] fluid communication with the inlet of only one of the vessels, and each of the vessel outlet ports providing [provides] fluid communication with the outlet of only one of the vessels,

a detector for analyzing vessel effluent, and  
a fluid handling system for providing fluid flow simultaneously through the at least six vessels, the fluid handling system comprising

an entrance control volume in fluid communication with the inlet of each of the at least six vessels,

an exit control volume in fluid communication with the outlet of each of the at least six vessels,

at least six flow restrictors, each of the at least six flow restrictors providing fluid communication between one of the at least six vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the at least six flow restrictors being approximately the same, such that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the at least six vessels that is apportioned approximately equally between each of the at least six vessels.

(135. (twice amended) A reactor for evaluating catalytic performance of members of a library, the reactor comprising [ : The reactor of claim 32 further comprising]

a plurality of reaction vessels for receiving library members, each of the plurality of reaction vessels having an inlet and an outlet,

a fluid handling system for providing fluid flow simultaneously through the plurality of reaction vessels, and

a sampling probe selectively positioned to sample reaction vessel effluent and adapted to transport sampled fluid to a detector,

the fluid handling system comprising an entrance control volume in fluid communication with the inlet of each of the plurality of reaction vessels, an exit control volume in fluid communication with the outlet of each of the plurality of reaction vessels, and a plurality of flow restrictors, each of the plurality of flow restrictors providing fluid communication between one of the plurality of reaction vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume,

the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the plurality of flow restrictors being approximately the same, so that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the plurality of reaction vessels that is apportioned approximately equally between each of the plurality of reaction vessels.

737. (twice amended) A reactor for evaluating catalytic performance of members of a library, the reactor comprising [The reactor of claim 32, wherein the fluid handling system further comprises]

a plurality of reaction vessels for receiving library members, each of the plurality of reaction vessels having an inlet and an outlet, and

a fluid handling system for providing fluid flow simultaneously through the plurality of reaction vessels, the fluid handling system comprising

an entrance control volume in fluid communication with the inlet of each of the plurality of reaction vessels,

an exit control volume in fluid communication with the outlet of each of the plurality of reaction vessels,

a plurality of flow restrictors, each of the plurality of flow restrictors providing fluid communication between one of the plurality of reaction vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the plurality of flow restrictors being approximately the same, so that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the plurality of reaction vessels that is apportioned approximately equally between each of the plurality of reaction vessels,

a plurality of outlet conduits and a selection valve, the outlet conduits providing fluid communication between the outlet of each of the plurality of reaction vessels and the selection valve, ;]

a sample bypass and a sampling valve, the sample bypass providing fluid communication between the selection valve and the sampling valve, ; and

a return line providing fluid communication between the sampling valve and the exit control volume, ;

the selection valve being adapted to divert fluid from a selected reaction vessel to the sample bypass while allowing fluid from non-selected reaction vessels to flow to the exit control volume,

the sampling valve being adapted to provide selective fluid communication between the sample bypass and the return line, and between the sample bypass and a detector.

*Cl*  
840. (amended) A reactor for evaluating catalytic performance of members of a library, the reactor comprising [: The reactor of claim 32 wherein the fluid handling system further comprises]

a plurality of reaction vessels for receiving library members, each of the plurality of reaction vessels having an inlet and an outlet,

a fluid handling system for providing fluid flow simultaneously through the plurality of reaction vessels, the fluid handling system comprising

an entrance control volume in fluid communication with the inlet of each of the plurality of reaction vessels,

an exit control volume in fluid communication with the outlet of each of the plurality of reaction vessels, and

*C*  
a plurality of flow restrictors, each of the plurality of flow restrictors providing fluid communication between one of the plurality of reaction vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the plurality of flow restrictors being approximately the same, so that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the plurality of reaction vessels that is apportioned approximately equally between each of the plurality of reaction vessels, and

a fluid distribution valve having a first valve portion, [and] a second valve portion, and a plurality of exhaust conduits providing fluid communication between the fluid distribution valve and the exit control volume, [; wherein] the first valve portion providing [provides] selective fluid communication between a reactive fluid source and the flow restrictors or the vessel inlets and between the reactive fluid source and the exhaust conduits, [;] the second valve portion providing [provides] selective fluid communication between an inert fluid source and the flow restrictors or the vessel inlets

and between the inert fluid source and the exhaust conduits, [; and] the resistance to fluid flow in each of the exhaust conduits being [is] approximately the same and being [is] about equal to the resistance to flow in each of the flow restrictors, so that fluid flow is apportioned approximately equally between each of the vessels and exhaust conduits.

*CJ*  
Q48. (amended) A reactor for evaluating catalytic performance of members of a library, the reactor comprising [The apparatus of claim 47, wherein the assembly further comprises]

an assembly containing a plurality of reaction vessels for receiving library members, each of the plurality of reaction vessels having an inlet and an outlet, the assembly comprising

a base block having a planar top surface and a bottom surface, the top surface of the base block having a plurality of wells formed therein,

*CJ*  
a cover block having a planar bottom surface, the bottom surface of the cover block being disposed on the top surface of the base block and having a plurality of depressions formed therein, the cover block being removably attached to the base block with each of the plurality of depressions being in substantial alignment with one of the wells, such that the aligned depressions and wells form cavities for containing the vessels, and

vessel inlet ports and vessel outlet ports located on the bottom surface of the base block, [cover; wherein] each of the vessel inlet ports providing [provides] fluid communication with the inlet of only one of the vessels, and each of the vessel outlet ports providing [provides] fluid communication with the outlet of only one of the vessels, and

a fluid handling system for providing fluid flow simultaneously through the plurality of reaction vessels, the fluid handling system comprising

an entrance control volume in fluid communication with the inlet of each of the plurality of reaction vessels,

an exit control volume in fluid communication with the outlet of each of the plurality of reaction vessels, and

*48*  
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a plurality of flow restrictors, each of the plurality of flow restrictors providing fluid communication between one of the plurality of reaction vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the plurality of flow restrictors being approximately the same, so that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the plurality of reaction vessels that is apportioned approximately equally between each of the plurality of reaction vessels.

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51. (amended) An apparatus for screening members of a library, the apparatus comprising [The apparatus of claim 15, wherein the vessel-containing assembly further comprises]:

an assembly containing at least six vessels for receiving library members, each of the at least six vessels having an inlet and an outlet, the assembly comprising

a base block having a planar top surface and a bottom surface, the top surface of the base block having a plurality of wells formed therein,

a cover block having a planar bottom surface, the bottom surface of the cover block being disposed on the top surface of the base block and having a plurality of depressions formed therein, the cover block being removably attached to the base block with each of the plurality of depressions being in substantial alignment with one of the wells, such that the aligned depressions and wells form cavities for containing the vessels,

a vessel inlet port located on the bottom surface of the base block, and vessel outlet ports located on the top surface of the cover block, the vessel inlet port providing fluid communication with an entrance control volume that provides fluid communication with the inlets of the vessels, each of the vessel outlet ports providing fluid communication with the outlet of only one of the vessels,

a detector for analyzing vessel effluent, and  
a fluid handling system for providing fluid flow simultaneously through the at least six vessels, the fluid handling system comprising:

an entrance control volume in fluid communication with the inlet of each of the at least six vessels,

an exit control volume in fluid communication with the outlet of each of the at least six vessels,

at least six flow restrictors, each of the at least six flow restrictors providing fluid communication between one of the at least six vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the at least six flow restrictors being approximately the same, such that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the at least six vessels that is apportioned approximately equally between each of the at least six vessels.

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62. (amended) A reactor for evaluating catalytic performance of members of a library, the reactor comprising [The apparatus of claim 47, wherein the vessel-containing assembly further comprises]

an assembly containing a plurality of reaction vessels for receiving library members, each of the plurality of reaction vessels having an inlet and an outlet, the assembly comprising

a base block having a planar top surface and a bottom surface, the top surface of the base block having a plurality of wells formed therein,

a cover block having a planar bottom surface, the bottom surface of the cover block being disposed on the top surface of the base block and having a plurality of depressions formed therein, the cover block being removably attached to the base block with each of the plurality of depressions being in substantial alignment with one of the wells, such that the aligned depressions and wells form cavities for containing the vessels, and

a vessel inlet port located on the bottom surface of the base block, and vessel outlet ports located on the top surface of the cover block, the vessel inlet port providing fluid communication with an entrance control volume that provides fluid

communication with the inlets of the vessels, each of the vessel outlet ports providing fluid communication with the outlet of only one of the vessels, and

a fluid handling system for providing fluid flow simultaneously through the plurality of reaction vessels, the fluid handling system comprising

an entrance control volume in fluid communication with the inlet of each of the plurality of reaction vessels,

an exit control volume in fluid communication with the outlet of each of the plurality of reaction vessels, and

a plurality of flow restrictors, each of the plurality of flow restrictors providing fluid communication between one of the plurality of reaction vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the resistance to fluid flow in the fluid handling system being greatest in the flow restrictors and the resistance to flow in each of the plurality of flow restrictors being approximately the same, so that maintaining a higher pressure in the entrance control volume than in the exit control volume results in simultaneous fluid flow through the plurality of reaction vessels that is apportioned approximately equally between each of the plurality of reaction vessels.

*36* 14. (amended) The apparatus of claim 9 [75] wherein the fluid handling system further comprises a plurality of exhaust conduits providing fluid communication between the fluid distribution valve and the exit control volume, wherein

the fluid distribution valve comprises a first valve portion and a second valve portion, the first valve portion providing selective fluid communication between a test fluid source and the flow restrictors or regulators and between the test fluid source and the exhaust conduits, the second valve portion providing selective fluid communication between an inert fluid source and the flow restrictors or regulators and between the inert fluid source and the exhaust conduits,

the resistance to fluid flow in each of the plurality of exhaust conduits being approximately the same and being about equal to the resistance to fluid flow in each of the plurality of flow restrictors or regulators, so that fluid flow is apportioned

approximately equally between each of the plurality of reaction vessels and plurality of exhaust conduits.

37 14  
31. (amended) The apparatus of claim 95 [75] wherein the fluid handling system further comprises a selection valve providing selective fluid communication between a selected reaction vessel and the detector such that a test fluid can be sequentially directed from the selected reaction vessel to the detector.

38 14  
38. (amended) The apparatus of claim 93 [75] wherein the fluid handling system further comprises

C10 a selection valve providing selective fluid communication between a selected reaction vessel and the detector, such that a test fluid can be sequentially directed from the selected reaction vessel to the detector, and

a control system for synchronizing the fluid distribution valve and the selection valve such that a time interval between initial contact of the test fluid with a library member in a reaction vessel and analysis of reactor effluent is about the same for the plurality of reaction vessels.

39 12 13 14  
39. (amended) The apparatus of claims 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein the fluid handling system comprises flow restrictors.

C11 40 12 13 14  
40. (amended) The apparatus of claims 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein each of the plurality of flow restrictors or regulators provides fluid communication between the entrance control volume and one of the plurality of reaction vessels.

41 12 13 14  
41. (amended) The apparatus of claims 35, 37, 40, 48, 62 or 93 [70, 71, 73, 74, 75 or 79] wherein the fluid handling system comprises flow restrictors, and each of the plurality of flow restrictors [or regulators] provides fluid communication between the entrance control volume and one of the plurality of reaction vessels.

47. (amended) The apparatus of claims 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein each of the plurality of flow restrictors or regulators provides fluid communication between one of the plurality of reaction vessels and the exit control volume.

48. (amended) The apparatus of claims 75, 71, 48, 48, 62, 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein the fluid handling system is a gas handling system for providing gaseous flow simultaneously through the plurality of reaction vessels.

49. (amended) The apparatus of claims 75, 71, 48, 48, 62, 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein the fluid handling system is a liquid handling system for providing liquid flow simultaneously through the plurality of reaction vessels.

50. (amended) The apparatus of claims 75, 71, 48, 48, 62, 71, 74 or 93 [70, 71, 73, 74, 75 or 79] further comprising a system for regulating the temperature of each of the plurality of reaction vessels.

51. (amended) The apparatus of claims 75, 71, 48, 48, 62, 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein the detector is selected from the group consisting of a gas chromatograph, a mass spectrometer, a visible spectrometer, an ultraviolet spectrometer and an infrared spectrometer.

52. (amended) The apparatus of claims 75, 71, 48, 48, 62, 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein the plurality of reaction vessels is at least six reaction vessels and the plurality of flow restrictors or regulators is at least six flow restrictors or regulators.

53. (amended) The apparatus of claims 75, 71, 48, 48, 62, 71, 74 or 93 [70, 71, 73, 74, 75 or 79] wherein the plurality of reaction vessels is at least forty-eight vessels and the plurality of flow restrictors or regulators is at least forty-eight flow restrictors or regulators.

*49 #10**(e.g. 8-9 // 122134)*

92. (amended) The apparatus of claims 35, 39, 40, 48, 62, 71, 74 or 92 [70, 71, 73, 74, 75 or 79] further comprising a catalyst in each of the plurality of reaction vessels.

*11*  
*pf* 93. (new) An apparatus for screening catalysts, the apparatus comprising two or more assemblies, each of the two or more assemblies containing a plurality of reaction vessels for receiving catalysts, each of the plurality of reaction vessels having an inlet and an outlet,

a fluid handling system for providing fluid flow simultaneously through the plurality of reaction vessels within an assembly, and for providing fluid flow sequentially between the reaction vessels of different assemblies,

a detector for analyzing reaction vessel effluent,

the fluid handling system comprising

an entrance control volume in fluid communication with a fluid distribution valve,

the fluid distribution valve providing selective fluid communication between the entrance control volume and a plurality of distribution valve outlet ports, each of the plurality of distribution valve outlet ports being in fluid communication with the plurality of reaction vessels within one of the two or more assemblies, such that a fluid can be sequentially directed into one of the distribution valve outlet ports, and then simultaneously through the plurality of reaction vessels of the assembly associated with the selected outlet port,

an exit control volume in fluid communication with the outlet of each of the plurality of reaction vessels, and

a plurality of flow restrictors or regulators, each of the plurality of flow restrictors or regulators providing fluid communication between one of the plurality of reaction vessels and (i) the entrance control volume, or alternatively, (ii) the exit control volume, the flow restrictors or regulators being adapted such that maintaining a higher pressure in the entrance control volume than in the exit control volume results in fluid flow through the reaction vessels that is apportioned approximately equally between each of the plurality of reaction vessels.